IN THE SPECIFICATION:

Please amend the specification as follows:

Please amend paragraph [0004] as follows:

[0004] The term "patterning device" as here employed should be broadly interpreted as referring to ~~means~~ a device that can be used to endow an incoming radiation beam with a patterned cross-section, corresponding to a pattern that is to be created in a target portion of the substrate; the term "light valve" can also be used in this context. Generally, the said pattern will correspond to a particular functional layer in a device being created in the target portion, such as an integrated circuit or other device (see below). Examples of such patterning device include:

Please amend paragraph [0005] as follows:

[0005] *a mask*: the concept of a mask is well known in lithography, and it includes mask types such as binary, alternating phase-shift, and attenuated phase-shift, as well as various hybrid mask types. Placement of such a mask in the radiation beam causes selective transmission (in the case of a transmission mask) or reflection (in the case of a reflective mask) of the radiation impinging on the mask, according to the pattern on the mask. In the case of a mask, the support ~~structure~~ will generally be a mask table, which ensures that the mask can be held at a desired position in the incoming radiation beam, and that it can be moved relative to the beam if so desired;

Please amend paragraph [0006] as follows:

[0006] *a programmable mirror array*: one example of such a device is a matrix-addressable surface having a visco-elastic control layer and a reflective surface. The basic principle behind such an apparatus is that (for example) addressed areas of the reflective surface reflect incident light as diffracted light, whereas unaddressed areas reflect incident light as non-diffracted light. Using an appropriate filter, the ~~said~~ non-diffracted light can be filtered out of the reflected beam, leaving only the diffracted light behind; in this manner, the beam becomes patterned according to the addressing pattern of the matrix-addressable surface. An alternative embodiment of a programmable mirror array employs a matrix arrangement of

tiny mirrors, each of which can be individually tilted about an axis by applying a suitable localized electric field, or by employing piezoelectric actuation mechanism. Once again, the mirrors are matrix-addressable, such that addressed mirrors will reflect an incoming radiation beam in a different direction to unaddressed mirrors; in this manner, the reflected beam is patterned according to the addressing pattern of the matrix-addressable mirrors. The required matrix addressing can be performed using suitable ~~electronic means~~ electronics. In both of the situations described here above, the patterning device can comprise one or more programmable mirror arrays. More information on mirror arrays as here referred to can be gleaned, for example, from United States Patents US 5,296,891 and US 5,523,193, and PCT patent applications WO 98/38597 and WO 98/33096, which are incorporated herein by reference. In the case of a programmable mirror array, the ~~said~~ support ~~structure~~ may be embodied as a frame or table, for example, which may be fixed or movable as required; and

Please amend paragraph [0007] as follows:

[0007] *a programmable LCD array*: an example of such a construction is given in United States Patent US 5,229,872, which is incorporated herein by reference. As above, the support ~~structure~~ in this case may be embodied as a frame or table, for example, which may be fixed or movable as required.

Please amend paragraph [0012] as follows:

[0012] Further, the lithographic apparatus may be of a type having two or more substrate tables (and/or two or more mask tables). In such "multiple stage" devices the additional tables may be used in parallel, or preparatory steps may be carried out on one or more tables while one or more other tables are being used for exposures. Dual stage lithographic apparatus are described, for example, in US 5,969,441 and ~~WO 98/40791~~ US 6,26,796, both incorporated herein by reference.

Please amend paragraph [0014] as follows:

[0014] A commonly used actuator is the Lorentz actuator. In such a device, an actuating force is derived from the magnetic field associated with a current driven through a suitably arranged coil. Short stroke Lorentz actuators are used to provide a ~~driving means~~ drive between the substrate or mask stage and the mirror block, on which the substrate or mask is

mounted. Large current densities are required in order to provide sufficiently powerful and compact actuators, which leads to significant dissipative heating within the coils.

Please amend paragraph [0016] as follows:

[0016] For these and other reasons, the principles of the present invention, as embodied and broadly described herein, provide for a lithographic Lorentz actuator having reduced eddy currents in the cooling element. In one embodiment, a lithographic projection apparatus is presented, comprising a radiation system for providing a ~~projection~~ beam of radiation, a support ~~structure~~ for supporting a patterning device that configures the ~~projection~~ beam according to a desired pattern, a substrate holder for holding a substrate, projection system for projecting the patterned beam onto a target portion of the substrate, and an actuator mechanism a coil arrangement in thermal contact with at least one cooling element, wherein the coil arrangement includes one or more slits in order to increase the electrical resistance of eddy current paths.

Please amend paragraph [0024] as follows:

[0024] According to a further embodiment of the invention, there is provided a device manufacturing method comprising ~~providing~~ <u>supporting</u> a substrate ~~held~~ by a substrate holder, providing a beam of radiation using an illumination system, imparting a desired pattern onto the beam of radiation by a patterning device supported by a support ~~structure~~, projecting the patterned beam of radiation onto a target portion of the substrate via a projection system; and positioning at least a part of one of the radiation system, the support ~~structure~~, the substrate holder, and the projection system by an actuator mechanism, the actuator mechanism comprising a coil arrangement in thermal contact with at least one cooling element, wherein the cooling element is provided with one or more slits configured to increase electrical resistance of eddy current paths.

Please amend paragraph [0037] as follows:

[0037] *a radiation system Ex, IL*: for supplying a ~~projection~~ beam PB of radiation (e.g. UV radiation). In this particular case, the radiation system also comprises a radiation source LA;

Please amend paragraph [0038] as follows:

[0038] *a first object table (mask table) MT*: provided with a mask holder for holding a mask MA (e.g. a reticle), and connected to first positioning mechanism PM for accurately positioning the mask with respect to ~~item~~ <u>a projection system ("lens")</u> PL;

Please amend paragraph [0039] as follows:

[0039] *a second object table (substrate table) WT*: provided with a substrate holder for holding a substrate W (e.g. a resist-coated silicon wafer), and connected to second positioning mechanism PW for accurately positioning the substrate with respect to ~~item~~ <u>projection system</u> PL; and

Please amend paragraph [0040] as follows:

[0040] [[*a*]] <u>*the*</u> *projection system ("lens") PL*: for imaging an irradiated portion of the mask MA onto a target portion C (e.g. comprising one or more dies) of the substrate W.

Please amend paragraph [0042] as follows:

[0042] The source LA (e.g. a mercury lamp or an excimer laser) produces ~~a beam of~~ radiation. This ~~beam~~ <u>radiation</u> is fed into an illumination system (illuminator) IL, either directly or after having traversed conditioning mechanism, such as a beam expander Ex, for example. The illuminator IL may comprise adjusting mechanism AM for setting the outer and/or inner radial extent (commonly referred to as σ-outer and σ-inner, respectively) of the intensity distribution in the beam. In addition, it will generally comprise various other components, such as an integrator IN and a condenser CO. In this way, the beam PB impinging on the mask MA has a desired uniformity and intensity distribution in its cross-section.

Please amend paragraph [0044] as follows:

[0044] The beam PB subsequently intercepts the mask MA, which is held on a mask table MT. Having traversed the mask MA, the beam PB passes through the lens PL, which focuses the beam PB onto a target portion C of the substrate W. With the aid of the second positioning ~~means~~ <u>mechanism</u> (and interferometric measuring ~~means~~ <u>device</u> IF), the substrate table WT can be moved accurately, *e.g.* so as to position different target portions C in the

path of the beam PB. Similarly, the first positioning ~~means~~ mechanism can be used to accurately position the mask MA with respect to the path of the beam PB, *e.g.* after mechanical retrieval of the mask MA from a mask library, or during a scan. In general, movement of the object tables MT, WT will be realized with the aid of a long-stroke module (~~course~~ coarse positioning) and a short-stroke module (fine positioning), which are not explicitly depicted in Figure 1. However, in the case of a wafer stepper (as opposed to a step-and-scan apparatus) the mask table MT may just be connected to a short stroke actuator, or may be fixed.

Please amend paragraph [0046] as follows:

[0046] *step mode*: the mask table MT and the substrate table WT are kept essentially stationary, while an entire pattern imparted to the ~~projection~~ beam is projected onto a target portion C ~~in one go~~ at once (i.e. a single static exposure). The substrate table WT is then shifted in the X and/or Y direction so that a different target portion C can be exposed. In step mode, the maximum size of the exposure field limits the size of the target portion C imaged in a single static exposure;

Please amend paragraph [0047] as follows:

[0047] *scan mode:* the mask table MT and the substrate table WT are scanned synchronously while a pattern imparted to the ~~projection~~ beam is projected onto a target portion C (i.e. a single dynamic exposure). The velocity and direction of the substrate table WT relative to the mask table MT is determined by the (de-)magnification and image reversal characteristics of the projection system PL. In scan mode, the maximum size of the exposure field limits the width (in the non-scanning direction) of the target portion in a single dynamic exposure, whereas the length of the scanning motion determines the height (in the scanning direction) of the target portion; and

Please amend paragraph [0048] as follows:

[0048] *other mode*: the mask table MT is kept essentially stationary holding a programmable patterning device, and the substrate table WT is moved or scanned while a pattern imparted to the ~~projection~~ beam is projected onto a target portion C. In this mode, generally a pulsed radiation source is employed and the programmable patterning device is updated as required after each movement of the substrate table WT or in between successive radiation pulses

during a scan. This mode of operation can be readily applied to maskless lithography that utilizes programmable patterning device, such as a programmable mirror array of a type as referred to above.

Please amend paragraph [0053] as follows:

[0053] The area 6 of the cooling plates 1 that is particularly prone to eddy currents, and in which it is most effective to locate ~~means~~ structures and/or devices to control eddy currents 5, is indicated in Figure 4. Figure 5 illustrates how eddy currents 5 may be controlled according to the present invention by introducing slits 7 in the cooling element 1. Since the resistance across the slits 7 is extremely high, currents are forced to circulate around longer paths of smaller average cross-sectional area. Eddy currents 5 are therefore reduced due to the increased resistance of the eddy current paths. The dissipated heat varies as the square of the current and is therefore also reduced, as is the damping force.

Please amend paragraph [0055] as follows:

[0055] Figures 6 and 7 depict an arrangement of slits 7 according to a further preferred embodiment of the present invention. Here, the slits 7 are reduced in length in order to accommodate cooling channels in a more efficient manner. Although it is not essential for the slits 7 to cut completely through the cooling element [[5]] 3, it is preferable that the slits penetrate through a major part of the cross-section. For cooling channels 8 of reasonable cross-sectional area, therefore, it is necessary that they avoid the slits 7.